

AMENDMENTS TO THE CLAIMS

1 – 20

(Canceled)

21. (Currently amended) A system for transmitting multiple ~~data~~ frames, each frame having a header field and a data field, ~~for~~ to deep packet processing functions of the data field of each frame in a given sequence, performing the deep packet processing on the data fields ~~frames~~, and forwarding the processed frames to their destination in the same given sequence, comprising:

- a) an input buffer for receiving frames for processing, having a buffer capacity of at least twice the size of the largest frame size, said buffer incorporated into a Data Moving Unit;
- b) a Frame Header Processing Unit for determining the type of deep packet processing operation to be performed on each frame;
- c) a plurality of processing core engines wherein each core engine has its own deep packet processing operation to be conducted on the data field of a frame, and an associated memory for storing a frame assigned to the engine until the engine is free to perform a deep packet processing operation on the data field of the frame data;
- d) an arbitrator for assigning an ascending frame sequence number to each frame and for forwarding each frame to one of the core engines for deep-packet processing;
- e) an output buffer for collecting each frame as it is processed by a core engine, said buffer having a buffer capacity of at least twice the size of the largest frame size and comprising a portion of the Data Moving Unit; and
- f) a sequencer for forwarding processed frames from the output buffer to their destination in the same order as they are received by the input buffer.

22. (Currently amended) A method of transmitting multiple ~~data~~ frames, each frame having a header field and a data field, to deep packet processing functions in a given sequence, performing the deep packet processing on the data field of

each frame frames and forwarding the processed frames to their destination in the same given sequence, comprising the steps of:

- a) receiving frames into an input buffer that is incorporated into a Data Moving Unit, said buffer having a buffer capacity of at least twice the size of the largest frame size to be processed;
- b) ~~determining the type of deep packet processing operation to be performed on each frame~~, using a Frame Header Processing Unit to determine from the header field the type of deep packet processing operation to be performed on the data field of each frame;
- c) assigning each frame to one of a plurality of processing core engines, based upon the processing operation to be conducted on the data field of the frame, each frame being stored in a memory associated with a core engine until the engine is free to perform the processing operation on the data field of the frame;
- d) performing at least one deep-packet processing operation on the data field in each frame;
- e) collecting the processed frames in an output buffer that is incorporated into a Data Moving Unit, said buffer having a buffer capacity of at least twice the size of the largest frame size to be processed; and
- f) sequencing and forwarding processed frames to their destination in the same order as said frames are received into the input buffer.